SUPREME COURT, U. S.

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IN THE

Supreme Court of the United States

OCTOBER TERM [redacted] 1969

No. [redacted] 228

TRI-WALL CONTAINERS, INC.,
Petitioner,

vs.

THE UNITED STATES,
Respondent,

and

ST. REGIS PAPER COMPANY,
Intervenor-Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CLAIMS

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PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CLAIMS

Petitioner prays that a Writ of Certiorari issue to review the decision in this cause of the United States Court of Claims.

Opinion Below

A copy of the Opinion of the Court of Claims, sought to be reviewed, is in the Appendix of this Petition, pp. 1a-16a. It is reported at 408 F. 2d 748; 161 U. S. P. Q. 116. The Report of Commissioner to the Court is reported at 157 U. S. Q. P. 703 and in the Appendix of this Petition, pp. 17a-32a.

The opinion and judgment of the Court of Claims was entered March 14, 1969. Jurisdiction of Writ of Certiorari is invoked under 28 U. S. C. § 1255 (1).

The Questions Presented

I. Can a patent claim for a product be held invalid on the ground of prior public use when the only evidence submitted to establish the similarity between the prior use product and the patent product were statements contained in letters written by a sales manager in an effort to sell his products even though witnesses testified at trial that the prior use and patented products were entirely different?

The decision of the Court of Claims in holding the patent in suit invalid because of petitioner's own prior use relied upon statements contained in letters written by petitioner's sales manager to customers while trying to sell petitioner's products as establishing similarity of the prior use product compared to the patented product. Testimony at trial by two witnesses who observed the prior use product and later the patented product clearly showed the two products to be entirely different. The evidence submitted by respondent as to the physical characteristics of the prior use board is vastly insufficient as a matter of law to satisfy by clear and convincing evidence the heavy burden of proof required to invalidate a patent on the ground of prior use.

II. Can a patent claim for a product manufactured in a specific manner and within defined limitations be declared invalid because of a public prior use of a different product which resembled the patented product in appearance but was manufactured by an entirely different process and possessed different physical and structural properties?

The decision of the Court of Claims in holding the patent in suit invalid because of petitioner's own prior use held that a manually-produced triple wall board that was

soft resembled the patented board but disregarded the teachings of the patent in suit and the language in the claims which defined a different corrugated paper board product that was strong and rigid and manufactured by a machine method incorporating distinct operating techniques and procedures.

Constitutional and Statutory Provisions

The Constitution

> "Art. 1, Sec. 8. The Congress shall have power . . . To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

35 U. S. C. Chapter 10—Patentability of Inventions

> "§ 100. *Definitions*
>
> When used in this title unless the context otherwise indicates—
>
> (a) The term 'invention' means invention or discovery.
>
> * * *
>
> "§ 101. *Inventions patentable*
>
> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

"§ 102. *Conditions for Patentability; Novelty and Loss of Right to Patent*

A person shall be entitled to a patent unless—

* * *

(b) the invention was . . . in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or . . . .

* * *

"§ 112. *Specification*

The specification shall contain a written description of the invention and of the manner and process of making and using it . . .

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention . . . .

Statement of the Case

Petitioner, Tri-Wall Containers, Inc., brought this suit under 28 U. S. C. § 1498 in the United States Court of Claims against respondent, United States, charging respondent with infringement of United States Letters Patent No. 3,096,224 (hereinafter called the "'224 patent"). The St. Regis Paper Company, a supplier of the patented product to the United States, intervened as a defendant. The case was heard by Commissioner Lane and on April 15, 1968 the Report of Commissioner to the Court recommended that the patent be held invalid under the provisions of 35 U. S. C. § 102. The Court of Claims adopted Commissioner Lane's recommendations in its opinion of March 14, 1969.

The patent in suit is for a corrugated paper board of a specialized nature adapted to be formed into shipping containers suitable for retaining and transporting heavy articles in commerce. The product of the patent in suit compares favorably with wood as a packaging material and has displaced wood as a shipping container for many articles transported by the Government such as electric motors and the like.

The claims in suit are product claims for triple wall corrugated paper board adapted for scoring and bending to form a shipping container and are clearly defined by process limitations. The claims in suit are of a kind recognized in patent law as "product-by-process" claims. The novelty of the patented product is not found alone in the physical appearance of the product. The novelty of the patented claims is achieved only when the product as defined in the claim is *manufactured* in accordance with the process limitations that are included in the claim.

Claim 1 reads as follows:

> "Triple wall corrugated paper board which is flat and adapted for scoring and bending to form a shipping container and consisting essentially of four paper liners, three corrugated paper mediums, the mediums being individually interposed between two liners in each instance, and adhesive applied to the ridges of the mediums' corrugations and the liners and intimately and rigidly bonding the mediums and liners together, the corrugations of the mediums being parallel to each other throughout said board and high enough so that the total thickness of said board is at least 3/8", and the total thickness of the liners and mediums being at least approximately .091", this total thickness being distrib-

uted between the liners and mediums so that said board is strong and rigid, .

said triple wall corrugated paper board having been made by a single pass of all of said sheets prior to setting of said adhesive simultaneously through a corrugated paper board machine having a heating and drying section operated at a temperature within the range of approximately 300° to approximately 350° F. and at a temperature-speed relationship which is varied with the humidity, the thickness, and porosity of said sheets to provide a residence time in said section sufficient to set said adhesive and make a rigid and strong triple wall corrugated paper board."

This claim defines a triple wall corrugated paper board comprising four separate liners (flat pieces of paper similar to wrapping paper), each of which is separated by and adhesively attached to a corrugated medium (a piece of flat paper that has been waved or corrugated). The process limitation of the claim requires that all four liners and three corrugated mediums be joined simultaneously in a corrugating machine by a single pass. The triple wall corrugated paper board defined by the claims in suit and produced in the manner specified therein results in a rigid and strong paper board and is totally different from any corrugated paper board that may have the same paper arrangement, paper weight or physical appearance.

For many years prior to the filing of the application for the patent in suit, the petitioner made and sold a product called *Laminite* which was used for packaging heavy articles of long length such as rolls of linoleum. The *Laminite* product was a combination of three corrugated mediums individually spaced between four liners and im-

pregnated with sulphur by the process of submerging the triple wall product in a bath of molten sulphur. The addition of sulphur impregnation to the triple wall paper board gave it strength and rigidity similar to wood, but the sulphur greatly increased the weight of the board and thus the weight of the shipping container and increased the cost of the material, and because of the impregnated sulphur in the material, disposal of the carton by burning was undesirable because of the emission of very noxious fumes.

While producing *Laminite*, petitioner experienced a complete breakdown of the equipment that was used to produce this triple wall sulphur impregnated board. The petitioner was forced to alter its production procedures and switch to a manual method for producing the triple wall corrugated board for subsequent submersion in the sulphur bath.

The manual method of producing the triple wall corrugated board consisted of first making the standard double wall corrugated board (two corrugated mediums individually spaced between three liners) which had been for many years the standard corrugated packaging material and gluing to this board a single face sheet (one corrugated medium glued to one liner). The double wall board was placed on a table and the single face sheet was manually passed over a glue roll, manually carried to a position directly above the double wall sheet, and then manually glued to the double wall. The double wall board was prescored to enable it to be formed into a shipping container and after the single face was added to it, it was submerged into the sulphur bath to increase its strength and sold as *Laminite*.

A small quantity of this manually-produced triple wall board (about one hour's production time in accordance with the disclosure of the patent in suit) was sold commer-

cially more than one year prior to the filing of the application for the patent in suit, while the total remainder of this manually-produced triple wall board was sulphur impregnated and sold as *Laminite*. It is this small quantity of the manually-produced unimpregnated triple wall board that the Court below found to be a prior use of the patented board, although the evidence in the record clearly shows that the manually produced board did not have the same physical characteristics as the patented board.

The Decision Below

The Court below in reaching its conclusion of patent invalidity because of a prior use completely shifted the burden of proof that normally attaches in patent cases.

There is of course a normal presumption that a patent issued by the United States Patent Office is valid 35 U. S. C. § 282. The burden of showing invalidity is a heavy one and rests squarely on the party asserting it, and every reasonable doubt should be resolved against him. *Mumm* v. *Decker* 301 U. S. 168, 171 (1937); *Radio Corporation of America* v. *Radio Engineering Laboratories, Inc.* 293 U. S. 1, 8 (1934).

The burden of showing patent invalidity because of a prior use is greater than the normal burden to show invalidity by anticipation or obviousness. Invalidity by a prior use must be proven by clear and convincing evidence and any reasonable doubt must be resolved in favor of the patentee. *Smith* v. *Hall* 301 U. S. 216, 233 (1936); *The Barbed Wire Patent* 143 U. S. 275, 285 (1891); *Coffin* v. *Ogden* 18 Wall. 120, 124 (1873). The holding of the Court below disregarded these long standing principles of patent law and found that because there was some evidence in the record that the manually-produced product resembled

the patented product, respondent had sustained its burden of proof.

ARGUMENT

In reaching the conclusion that the patent in suit was invalid because of petitioner's own public prior use and sale of its manually-produced product, the Court below was required to conclude as a matter of law that the manually-produced product was not patentably distinguishable from the product claimed in the patent. The evidence relied upon by the Court to make this finding was a series of letters composed by petitioner's sales manager in his efforts to induce customers to buy petitioner's products. Because of a disability, the sales manager was unable to testify. Respondent did not introduce any testimony from any of the alleged purchasers of the prior use board to show that it in fact had the same characteristics as the patented board, nor did respondent introduce into evidence any cartons made in accordance with the manual process to show that they possessed the same physical characteristics as the patented board.

At trial, petitioner called two witnesses who actually were present when the prior use triple wall board was made and each testified that it did not possess the remarkable physical and structural characteristics of the patented board. Each of the witnesses had the opportunity to physically observe, feel and evaluate the prior use triple wall board and each emphatically stated that it was of a soft structure and did not possess the wood-like feeling and character of the patented board.

Lichtenstein, an engineer employed by petitioner at the time the invention was made, testified concerning the unimpregnated triple wall board as follows:

"Some was in fact sold this way. In general, the product that resulted from this triple wall, handmade material, was soft and had little beam strength. It had very little of what we have heard today of the character of wood." (R. 138)

He then went on to describe how the invention of the patent in suit was made and described the first patented product as follows:

"After some work adjusting speeds, time, temperature, we produced a product. Quite to our surprise, this product was different than the unimpregnated, handmade tri-wall, and to follow the description we have used today, it had the wood-like character of Laminite. (R. 141)

"It was a new product. It had this strong characteristic, unlike the soft hand-made triple wall. (R. 142)

Robert L. Kreyling, an engineer for Philadelphia Quartz Company, witnessed plaintiff's operation of manually producing triple wall corrugated paper board and described the product as follows:

"They manually assembled the combination on the jig. A single facer always had blisters and cockles in it, because you just couldn't get the thing smooth, you couldn't get one hundred percent bond by that method.

"The single face side of it gave you a very, very soft feel, and in general, it was not—well, it was not any more rigid than the double wall combination you started with, and there was even reason to question whether it was as rigid as the double wall because you had gotten a softer combination after putting that much more silicate on it.

Q. "How did this board feel to you before it was impregnated with sulphur?
A. "Basically it felt soft." (R. 788)

Kreyling was also present in plaintiff's plant during the initial operation of the corrugating machine that produced the patented board and testified regarding his observation of this visit as follows:

Q. "With regard to the corrugating line that you also saw in operation in 1953, what kind of board was this corrugating machine producing?
A. "What kind of board? Well, of course you had CAA combination with your mediums. I guess the mediums were semi-chemical, but I am sure that the four liners were all 42-pound Kraft at this stage. I am quite sure of that; although there again—right at the time they begin to introduce two 90-pound liners at the outside—I don't know whether they had four 42-pound Kraft liners or two 42 and two 90-pound Kraft liners.

"Anyway, this was basically your combination of Kraft liners, and I am fairly certain it was semi-chemical medium throughout.
Q. "Did each single facer make a single face?
A. "The three single facers each made a completed single face web.
Q. "And what happened to the single face web?
A. "It accumulated on the bridge.
Q. "Then what happened to the accumulated webs on the bridge?
A. "As the double backer setup was ready, it was pulled on through and over the glue rolls, and through the combiner.

Q. "When you say it was pulled on—
A. "The three single face webs and the bottom liner were pulled simultaneously, passed the three webs over the glue station, and the liner underneath, and you pulled them all over, all four simultaneously over the hot plate section and the curing section, and onto the slitter and the knife.
Q. "Did you have an opportunity to observe the board that was produced at the end of this line?
A. "Oh, yes, I spent three-fourths of my time down there.
Q. "Will you describe the board that you saw?
A. "I can only describe what it felt like and looked like.
Q. "Will you do that, please?
A. "It had been coming out—it was coming out hot, and it had a good, firm, rigid dry feel, and it certainly, when you went to flex it, it was a very, very rigid structure.
Q. "Were you surprised at these characteristics?
A. "Yes, I was, because I had been with manually assembling combination of boards throughout all my experience, and I had never seen anything with the rigidity of this triple wall combination." (R. 789-91)

These two witnesses saw the manually-produced triple wall corrugated paper board made by plaintiff and their uncontradicted testimony shows that this board was not the same as the patented board. The manually-produced corrugated board sold by plaintiff more than one year prior to the filing of its application did not anticipate the triple wall corrugated paper board claimed by the patent in suit. There is absolutely no similarity between the physical char-

acteristics of these two products. The patented product was a new and different product than that known to the corrugated paper board art.

A prior use of a *patented product* more than one year before the filing of the patent application is a bar to the subsequent issuance of a valid patent. However, one may not speculate that the invalidating public prior use product was in fact the patented product. The evidence to substantiate the prior use must be clear and convincing, and it must comprise the preponderance of the evidence. Letters written by a sales manager to sell a product, unsubstantiated by other evidence, are insufficient in law to show a prior public use and their effect is vitiated when there is introduced at trial testimony from two different sources directly contrary to statements contained in the sales manager's letters. Petitioner requests that this Court should reverse the Court below on the ground that it has violated the long-established standard of proof required to show invalidity of a patent on the ground of prior public use. This Court should not permit a patent to be invalidated on evidence that is most speculative and inconclusive and which raises serious doubt as to all the facts concerning a prior use.

Conclusion

We submit that a Writ of Certiorari should be granted to review these errors of the Court below:

1. error in disregarding the burden of proof required to declare a patent invalid because of a public prior use;

2. error in declaring "product-by-process" claims invalid on a prior use of a product possessing totally different physical and structural characteristics from the product claimed.

Respectfully submitted,

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APPENDIX

APPENDIX

Opinion of the United States Court of Claims

Decided March 14, 1969

In the United States Court of Claims

No. 238-63

(Decided March 14, 1969)

TRI-WALL CONTAINERS, INC. v. THE UNITED STATES AND ST. REGIS PAPER COMPANY, INTERVENOR-DEFENDANT

Before COWEN, *Chief Judge*, LARAMORE, DURFEE, DAVIS, COLLINS, SKELTON, and NICHOLS, *Judges*.

OPINION

PER CURIAM: This case was referred to Trial Commissioner Donald E. Lane with directions to make findings of fact and recommendation for conclusions of law under the order of reference and Rule 57(a). The commissioner has done so in an opinion and report filed on April 15, 1968. Exceptions to the commissioner's findings and report were made by all of the parties. The case has been submitted to the court on oral argument of counsel and the briefs of the parties. Since the court is in agreement with the opinion, findings and recommendation of the commissioner, with very slight modifica-

tions, it hereby adopts the same, as modified, as the basis for its judgment in this case as hereinafter set forth. Therefore, the court concludes as a matter of law that claims 1, 2, and 3 of U.S. Patent No. 3,096,224 are invalid and judgment is entered to that effect with plaintiff's petition dismissed.

OPINION OF COMMISSIONER

LANE, *Commissioner:* This is a patent suit under Title 28 U.S.C. § 1498, in which plaintiff seeks to recover reasonable and entire compensation for the alleged unauthorized use by defendant of a patented invention. Plaintiff alleges infringement of claims 1, 2, and 3 of U.S. Patent No. 3,096,224 entitled "Corrugated Paper Board Product," which issued to plaintiff on July 2, 1963. Plaintiff is the owner of the '224 patent. The parties have agreed to defer accounting issues until the question of liability has been determined. Defendant asserts noninfringement, and intervenor asserts invalidity. Validity and infringement of the three asserted patent claims are the issues presented to the court for decision.

It is found that claims 1–3 of U.S. Patent No. 3,096,224 are invalid under the provisions of Title 35 U.S.C. § 102.

The invention claimed by the patent in suit relates to triple wall corrugated paper board including three corrugated sheets interposed between four spaced liner sheets. Triple wall corrugated paper board possesses desirable properties for packaging heavy objects and protecting frail objects in transit. It is rigid and strong, comparing favorably with wood as a packaging material for shipping objects too heavy to be shipped in prior corrugated paper board containers. Findings of fact 13–14 which accompany this opinion define the terminology used herein and briefly summarize the history of the corrugated paper board industry.

The three claims of the '224 patent are product-by-process claims. They define a product by use of both structural description and a recitation of the method for making the product. Variations which exist in the language of the three patent claims are not important to the discussion of claim validity which follows: Claim 1, which is representative, is repro-

duced below with the *method* recitation set out as a separate paragraph:

Patent Claim 1

> Triple wall corrugated paper board which is flat and adapted for scoring and bending to form a shipping container and consisting essentially of four paper liners, three corrugated paper mediums, the mediums being individually interposed between two liners in each instance, and adhesive applied to the ridges of the mediums' corrugations and the liners and intimately and rigidly bonding the mediums and liners together, the corrugations of the mediums being parallel to each other throughout said board and high enough so that the total thickness of said board is at least 3/8", and the total thickness of the liners and mediums being at least approximately .091", this total thickness being distributed between the liners and mediums so that said board is strong and rigid.
>
> said triple wall corrugated paper board having been made by a single pass of all of said sheets prior to setting of said adhesive simultaneously through a corrugated paper board machine having a heating and drying section operated at a temperature within the range of approximately 300° to approximately 350° F. and at a temperature-speed relationship which is varied with the humidity, the thickness, and porosity of said sheets to provide a residence time in said section sufficient to set said adhesive and make a rigid and strong triple wall corrugated paper board.

Claim 2 of the '224 patent adds to claim 1 that the thickness of the board is at least ½ inch and that the corrugations of at least one of the mediums are at least approximately .181 inch high. Claim 3 adds to claim 2 a recital that at least the liners on the outsides of the board are thicker than the thickest one of the mediums.

The best evidence introduced by the intervenor-defendant to invalidate the patent claims was evidence of a series of sales by plaintiff of a triple wall corrugated paper board produced by a manual process. Section 102(b) of title 35 U.S. Code provides that a person shall be entitled to a patent unless the invention was "in public use or on sale in this coun-

try, more than one year prior to the date of the application for patent in the United States."

Sale and public use of triple wall corrugated paper board produced by plaintiff's manual process occurred more than 1 year before October 2, 1953, which is assumed for the purposes of this case to be the priority date for plaintiff's application for a United States patent. Plaintiff does not controvert the evidence showing public use or sale of the manually produced triple wall board but contends that triple wall corrugated paper board as defined by the claims here in suit is patentably distinguishable from triple wall board produced by its manual process.

Plaintiff has attempted to distinguish the patented triple wall corrugated product and the product of its prior art manual procedure by asserting that the machine-made patented product has wood-like characteristics while the manually laminated product has very few desirable qualities for a container. Such assertions are not supported by record evidence in this litigation. The evidence offered by the defendant-intervenor to show substantial identity of the product of the asserted patent claims and the manually produced item sold by plaintiff in 1952 is summarized below.

The product of the asserted patent claims is structurally indistinguishable from carefully manufactured triple wall board made according to plaintiff's manual method. Any difference in strength which might exist between these two products results from the greater uniformity and efficiency which can be achieved by machine (double backer) manufacture. The actions of the plaintiff's officers and agents during the period 1952–1953 show that the manually produced product was asserted to have the same desirable properties which plaintiff now uses as a basis for arguing patentability of the wall board claim in the '224 patent. It is concluded that the *product* defined in the asserted patent claims is not patentably distinguishable from the *product* of the prior manual process.

It is well established that a product claimed as made by a new process is not patentable unless the product itself is new. *The Wood-Paper Patent*, 90 U.S. (23 Wall.) 566, 596 (1874), *Cochrane* v. *Badische Anilin & Soda Fabrik*, 111 U.S. 293, 311 (1884). In the earlier case the plaintiff sued for

infringement of a patent claim for paper pulp described as produced by a new process. The Supreme Court held the patent claim invalid because paper pulp was itself an old product, stating:

> Paper-pulp obtained from various vegetable substances was in common use before the original patent was granted to Watt & Burgess, and whatever may be said of their process for obtaining it, the product was in no sense new. The reissued patent . . . is, therefore, void for want of novelty in the manufacture patented. 90 U.S. (23 Wall.), p. 596.

More recent cases point out that the addition of a method step in a product claim, which product is not patentably distinguishable from the prior art, cannot impart patentability to the old product. *Jungersen* v. *Baden*, 69 F. Supp. 922, 928, 72 USPQ 426, 431 (D.C. S.D. N.Y. 1947), *aff'd*, 166 F. 2d 807 (2d Cir. 1948), *aff'd*, 335 U.S. 560 (1949); *In re Stephens*, 345 F. 2d 1020, 1023, 145 USPQ 656, 658 (CCPA 1965).

The parties have requested findings which bear on the issue of the obviousness of the *method* of manufacturing the product of the asserted patent claims. Because of the legal principles expressed above, obviousness of the *method* is not a question for decision in this litigation. The accompanying findings of fact, although they may be indirectly relevant to patentability of the method, have been drafted to resolve questions of validity of the asserted *product* claims.

It should be noted that Section 102(b) is literally applicable only if the public use or sale is of the invention on which a patent application is later filed. However, complete identity of (1) a product sold or publicly used and (2) a product as claimed in an application filed more than 1 year after the sale or public use, is not a prerequisite for invalidation of the patent on the basis of the prior sale or use. *Connecticut Valley Enterprises, Inc.* v. *United States*, 172 Ct. Cl. 468, 474, 348 F. 2d 949, 953, 146 USPQ 404, 407 (1965); *Dix-Seal Corp.* v. *New Haven Trap Rock Co.*, 236 F. Supp. 914, 917–920, 144 USPQ 57, 61–63 (D.C. Conn. 1964). As the findings of fact show, the prior art product and the claimed product are structurally identical and possess substantially identical physical properties. Section 102(b) is applicable in this case.

In view of the invalidity of all the asserted patent claims, it is not necessary to consider the numerous alternative invalidity defenses raised by the intervenor-defendant, or the issue of infringement. See *Martin-Marietta Corporation* v. *United States*, 179 Ct. Cl. 70, 373 F. 2d 972, 153 USPQ 206 (1967). Plaintiff's petition should be dismissed.

FINDINGS OF FACT

1. Plaintiff seeks recovery of reasonable and entire compensation under 28 U.S.C. § 1498 for the unauthorized use and manufacture by or for the United States of a patented invention relating to corrugated paper board products. The claim herein is based upon the alleged infringement of United States Letters Patent No. 3,096,224 granted in the names of Samuel Goldstein and Immanuel Lichtenstein on July 2, 1963, for "Corrugated Paper Board Product." The '224 patent in suit was issued to and is owned by Tri-Wall Containers, Inc., a corporation organized under the laws of the State of New York, as assignee of the inventors.

2. Intervenor-defendant St. Regis Paper Company voluntarily intervened in this case asserting pecuniary interest in that St. Regis had indemnified the defendant United States against certain infringement claims.

3. The parties agreed that the issues of validity and infringement of the '224 patent first be determined upon proofs, arguments, findings of fact, and conclusions of law, and that accounting issues be deferred until after the entry of judgment or liability by the court.

4. No action has been taken on plaintiff's claim by the Congress or any department of the Government in any judicial proceeding including any in the Tax Court.

5. On July 15, 1963, the General Services Administration was notified that its procurement of certain corrugated paper board products was an alleged infringement of United States Letters Patent No. 3,096,224.

6. The petition as originally filed by plaintiff also alleged that procurement by the United States was infringement of two additional patents owned by the plaintiff, namely, United States Patent No. 2,969,170, issued on January 24, 1961, and United States Patent No. 2,985,553, issued on May 23, 1961. Plaintiff, under the provisions of Rule 67(a)(2), dismissed

the allegations of patent infringement as to patents 2,969,170 and 2,985,553.

7. The patent in suit, United States Letters Patent No. 3,096,224 dated July 2, 1963, issued upon application Serial Number 150,618, filed November 3, 1961, as a *continuation* of application Serial Number 604,429, filed August 16, 1956, which in turn was a *division* of application Serial Number 383,756, filed October 2, 1953. Application Serial Number 604,429 was not directed solely to subject matter described and claimed in the original application Serial Number 383,756 as filed, and was not exempt from statutory requirements for execution. Application Serial Number 604,429 recites that the application was signed, executed, and sworn to by the joint applicants Goldstein and Lichtenstein before a New York notary public at New York, New York, on August 14, 1956. At the trial, applicant Lichtenstein admitted on cross-examination that he was in Connersville, Indiana, during the entire week from Monday, August 13, until Friday, August 17, 1956; that in fact he did not appear before the notary public in New York and take the oath which the application recites that he took on August 14, 1956; that he does not have a completely clear recollection of the circumstances surrounding the execution of application 604,429; and that he regards the making of an unsworn statement as being equivalent to taking an oath to the same effect. The conduct of Lichtenstein in signing said application is found to be without fraudulent intent.

8. It is found that the invention claimed in the '224 patent in suit was sufficiently described in applicants' prior abandoned application to comply with Title 35 U.S.C. § 112. One variance exists between abandoned application 604,429 when compared with the fundamentally similar specifications of earlier filed patent 2,759,523. The abandoned application 604,429 refers to a temperature of 330° F. whereas the other specifications recited 350° F. This appears to be the result of a typographical error. The teaching relating to a speed-temperature correlation which is expressed in all three patent specifications is adequate to enable a person skilled in the art to practice the invention.

9. Product claims were not present in original patent application 383,756, filed October 2, 1953. They were first inserted

by amendment dated November 4, 1954. After a restriction requirement made by the Patent Office, the product claims were withdrawn from the original application. The second patent application 604,429, filed on August 16, 1956 (the abandoned application), and the third application 150,618, filed on November 3, 1961 (the application which matured into the '224 patent in suit), both contained only product claims. During the prosecution of product claims in the three applications, the claim recitals were varied. The product claims of all three patent applications recited the same basic structure of three corrugated sheets interposed between four liner sheets. The '224 patent in suit is assumed for the purposes of this case to be entitled to a priority date as of October 2, 1953, the filing date of the original application 383,756.

10. The '224 patent in suit discloses a corrugated paper board product which is rigid and strong, which compares favorably with wood as a packaging medium, and which has a cushioning effect on products contained therein which is not exhibited by packages or crates constructed of wood. The patented paper board includes three corrugated sheets interposed and sandwiched between four spaced liner sheets, formed by simultaneously setting the adhesive during a single pass of all of said sheets through a heating and drying section of a machine. While prior triple ply corrugated paper board in which three corrugated sheets had been interposed between four spaced liner sheets had been produced, such a product had not been produced by a machine in the manner recited in the '224 patent claims.

11. The product claimed in the '224 patent may be described by the manner in which it is produced. Three sheets of paper are corrugated and the ridges of the corrugations are adhesively secured to liner sheets forming three composite sheets of single face corrugated paper board. The three sheets of single face corrugated board are brought into juxtaposition at one end of a corrugated paper board machine and passed over hot preheater drums. An outer liner or fourth liner is also run over a hot preheater drum at approximately the same time. The three sheets of single face corrugated paper board and the liner sheet are all preheated, and the single face

sheets are then run over gluing rolls where glue is applied to the ridges of the corrugations which extend transversely to the direction of travel of the paper webs, and the four juxtaposed paper webs are brought into a machine known as a double backer in order to set the glue just applied. At the time that the juxtaposed paper webs go into the double backer the sheets are relatively heavily laden with moisture. Enough heat is applied in the double backer not only to set the glue but also to dry the paper to at least some extent. The inventors found that the optimum conditions for accomplishing the proper setting of the glue, and therefore bonding of the four juxtapositioned paper webs is to run the webs through the double backer at between 135 and 150 feet per minute with the temperature of the hot plates of the double backer maintained between 325° and 330° F. An exact speed-temperature relationship cannot be set forth due to variables encountered such as humidity, thickness of paper, porosity, and other factors. The '224 patent specification discloses speed and temperature ranges which encompass 100 to 175 feet per minute and 300° to 350° F.

12. The three claims of the '224 patent are product claims. They recite structural limitations and also recite the method for making the product. Claim 1, reproduced in the body of the opinion, is representative of all three claims in issue which differ only in reciting different dimensions for corrugated and liner sheets, as noted in the opinion.

13. The history of the corrugated paper board industry involves numerous product improvements. Unlined corrugated material was known as early as 1870. Corrugated sheets have been used as cushioning but since they had no structural strength they could not be used as a carton. Increased strength has been a goal of the industry in its attempts to supplant wood as a material for the construction for shipping containers. The strength of corrugated paper products was at an early date slightly improved by gluing a liner, a flat sheet of paper, to a corrugated medium to produce a single face corrugated sheet. Single wall board, sometimes referred to as double face, followed. Single wall board includes a corrugated medium placed between two liner sheets. Single wall resulted in a paper board with enough structural strength

to be used in the manufacture of cartons. In approximately 1920 the corrugated paper board container industry began to make a board which was designated as double wall board. Double wall board consists of two corrugated mediums interposed between three liner sheets. The advantages of double wall board over single wall (double face) board were that double wall board enabled a shipper to increase the weight of the contents in a shipment and that it provided a material with a greater cushioning effect. In the early 1950's plaintiff's predecessor developed and introduced triple wall corrugated paper board. This product was a corrugated paper board which embodied three corrugated mediums interposed between four spaced liner sheets.

14. The history of development work on triple wall board by plaintiff is important in relation to validity of the patent in suit. In 1947 plaintiff became an exclusive licensee for the United States east of the Mississippi under patents involving a product known as *Laminite*. *Laminite* was a channel-shaped, triple wall, corrugated paper product impregnated with sulfur to increase the strength of the product. This product was originally made by gluing together three sheets of previously formed single face board and one liner sheet on a machine and then immersing the product in molten sulfur. Difficulties were encountered with the initial channel-forming machine for making *Laminite*. Plaintiff consulted numerous experts to determine the best method of overcoming the forming machine difficulties. At the time that the experts were considering possible solutions to the machine problems, there was also running at the plant a corrugating machine consisting of two single facers and a double backer. The channel-forming machine and the corrugating machine were parallel to each other, separated by a distance of a few feet. The channel-forming machine which made *Laminite* did not obtain proper adhesion or lamination between the various components of the triple ply product. When the mandrels of the *Laminite* machine were not exactly aligned, the resulting product had kinks caused by slippage of the various plies of the triple ply product. A new machine was built to produce the triple ply product which was to be impregnated with sulfur. The new machine did not perform in the manner

expected and produced only waste. Plaintiff was in the position where it could not fill the orders of its customers for *Laminite*.

15. A manual method for the manufacture of *Laminite* was developed. The method consisted of making a double wall sheet of corrugated paper board upon machinery, i.e., with two single facers and a double backer. The double wall board was then cut to suitable lengths and placed on a table where a cut length of single face was passed over a suitable adhesive roll by several operators who manually placed the single face over the double wall board in order to adhere the single face to the double wall. The manufacture of triple wall by this manual method is shown in intervenor-defendant's exhibit 8. The double wall board had previously been appropriately scored so that after the single wall had been set in place the triple ply board could be placed upon a suitable jig and folded into a channel shape. The channel shape was then dipped into a molten sulfur bath. Triple wall corrugated board produced by plaintiff's above-described method was also sold in the plain, unimpregnated state, shipped in the form of flat, scored, and slotted sheets for making shipping containers such as fivefold cartons and regular slotted cartons and covers for *Laminite* channels. Starting at least as early as May 16, 1952, plaintiff sold its unimpregnated triple wall corrugated paper board products under the trademark "Tri-Wall Pak."

16. Contemporaneous sales correspondence and documents produced by plaintiff from its files and in evidence in intervenor-defendant's exhibit 9A in this case reflect the following sales of unimpregnated triple wall corrugated paper board products produced by plaintiff's manual method more than 1 year prior to October 2, 1953, the priority date of the '224 patent claims.

Product	Customer	Date	IDX-9A
Scored covers	Kaiser Al. & Chem. Corp	7/18/51	L-10
Containers	Bigelow-Sanford Carpet Co	3/18/52	L-40
Containers	Magee Carpet Co	7/24/52	L-62
Containers	Metal Trims Inc	9/ 8/52	L-73
Containers	U.S. Rubber Co	9/25/52	L-84
Containers	Columbia Steel & Shafting Co	9/29/52	L-85

17. With respect to the quality and attributes of the unimpregnated triple wall corrugated paper board made by its prior manual method, plaintiff made the following contemporaneous claims and representations to its customers and potential customers:

(a) To Aluminum Company of America, on September 11, 1951: A possible substitute "for your present 3/8" lumber containers."

(b) To Kirsch Company, on January 3, 1952: This "container is decidedly competitive with the wood box, both performancewise and costwise. In fact, we are now supplying Lorentzen Hardware with this type box for their export shipments."

(c) To Kaiser Aluminum & Chemical Corp., on February 28, 1952: "[W]e understand that you are contemplating continuing the use of Laminite for certain sizes, and possibly substituting the five fold container for your present wood boxes. With this in mind, we would like to ship you a representative quantity of the five fold sheets in a size that would be best adapted for your test shipments. * * * Incidentally, the puncture test on our triple wall sheet is over 20% better than that for Alcoa's sheet."

(d) To Engineer Research & Development Labs, on April 21, 1952: "We shipped the ten pieces of triple wall on April 17th, * * *. Walter Armstrong, while at Atlantic City, thought there might be a use for our triple wall sheets as a substitute for plywood in the packing of army maps. We hope so."

(e) To Quartermaster Food & Container Institute, on July 8, 1952: "Triple wall may be obtained in plain sheet form or in special design, slotted and scored sheet which forms a container up to twenty-four inches in cross section and in lengths up to twenty feet."

(f) To Columbia Steel & Shafting Co., on September 3, 1952: "Our Tri-Wall Pak tests approximately 800#."

(g) To Reynolds Metals Company, on September 19, 1952: "At present this particular type of container [Tri-Wall] is being used not only where a great deal of cushioning is required but also as a substitute for wood boxes in export as well as domestic shipments. Our puncture test of 'Tri-Wall Pack' is in the neighborhood of 800 lbs."

18. Other documents from plaintiff's files and in evidence, in addition to those identified above, establish the commercial

use of unimpregnated triple wall corrugated board containers produced by plaintiff's manual method more than a year prior to October 2, 1953.

(a) In November 1951, in connection with a price quote on unimpregnated fivefold triple wall boxes submitted to Pittsburgh Plate Glass Co., plaintiff wrote:

> We are enclosing several pictures taken at Michigan Seamless Tubing plant showing our Triple Wall boxes in use. These particular boxes are 6″×8″—24′4″ and, as you see, they are taking a considerable amount of abuse.

(b) In January 1952, plaintiff wrote to Appleton Wire Works, Inc.:

> In addition to our Laminite line, we have developed something that no other corrugated manufacturer has attempted, namely, a Triple Wall, Five Fold, Scored Corrugated Sheet, which may be made up into containers measuring up to 14″ and in length up to and including 25′. This product has been very popular as a substitute for the wooden box where the item is not too flexible, particularly in the long lengths.

(c) In January 1952, plaintiff also wrote to The Norton Company:

> [W]e are manufacturing a Triple Wall, Five Fold, Scored Corrugated Sheet in sizes to make up containers measuring 14″ and up to 25′ in length. This triple wall flat sheet is considerably stronger than the present double wall sheet now used in industry, and compares favorably in end use with a wood box, particularly in the shorter lengths. Naturally, the cost is considerably less than wood.

(d) In March 1952, in an interoffice memo, plaintiff's sales manager wrote:

> Kindly ship to me at once * * * triple wall five fold sheet. * * * [C]ustomer (Michigan Seamless Tube Co.) is ready to reorder C.L. and wants to decide whether or not to have slotted ends. ["C.L." in this memo means freight car load.]

(e) In September 1952, plaintiff wrote to Columbia Steel & Shafting Co.:

> Tri-Wall Pak is now being supplied to Michigan Seamless Tube Co., * * *; Van Huffel Tube Co., * * *;

Trent Tube Co., * * *; and to many manufacturers of metal extrusions.

19. The commercial success and sales of plaintiff's triple wall corrugated board products produced by the manual method, coupled with a desire to reduce production costs and increase production rates, prompted the patentees to develop a machine method of making the triple wall board product. The all-machine laminated triple wall board was marketed for the first time in 1953. For a short time thereafter plaintiff sold both machine-made and manually produced triple wall board under the same trademark, "Tri-Wall Pak."

20. Any degree of difference in quality between the triple wall corrugated board in which all three single face components and the bottom liner are machine-laminated by means of a conventional double backer and the triple wall board of the same constituents in which only two of the three single face components and the bottom liner are machine-laminated by means of a conventional double backer, and the third single face component is then hand-laminated to the resulting composite structure, results from a greater degree of uniformity of bonding of the third single face component to the remaining structure which can be achieved by the double backer. It is possible to achieve good bonding by either method.

21. As between two specimens of triple wall board made of the same components, one made by the manual method, and the other made by the all-machine method, the glue bonds in each specimen being well made in accordance with their respective manufacturing methods, there is no significant difference in the quality of the boards or in their suitability for use in shipping containers. The test results of record in this case show a substantial identity of physical properties.

22. The product defined in the '224 patent claims is found to be anticipated by the product produced by plaintiff under its prior manual method. The patented product is found to possess the identical structure and indistinguishable physical properties when compared to the prior art product of plaintiff.

23. The patent application files of the three relevant applications show that the Patent Office was not apprised of the extent or timing of the public sales of triple wall corrugated

board made by plaintiff's prior manual method. There is no indication that the Patent Office was aware of the complete facts regarding such prior use and sale when it allowed and issued the claims of the '224 patent.

24. Intervenor-defendant has asserted that the '224 patent is invalid for the reason that there had been produced by Syracuse Containers, a division of Robert Gair Company, Inc., a product which was substantially identical to the product disclosed and claimed. During the period 1935–1940, the Syracuse Containers plant produced and sold a specialized item in the form of an insulating board, for certain items such as ice cream containers, composed of three liners and three corrugated mediums. The insulating board made at Syracuse Containers including only three liners is structurally distinguishable from the plaintiff's claimed product. There has been no showing that the Syracuse board possesses strength comparable to plaintiff's claimed triple wall board. The product made at Syracuse does not anticipate the '224 patent claims.

25. The invention claimed is set forth in the three product-by-process claims which vary only in calling for different thicknesses of paper board and height of the fluted components. All three patent claims recite a triple wall corrugated paper board product made by a method defined as follows:

> * * * said triple wall corrugated paper board having been made by a single pass of all of said sheets prior to setting of said adhesive simultaneously through a corrugated paper board machine having a heating and drying section operated at a temperature within the range of approximately 300° to approximately 350° F. and at a temperature-speed relationship which is varied with the humidity, the thickness, and porosity of said sheets to provide a residence time in said section sufficient to set said adhesive and make a rigid and strong triple wall corrugated paper board.

26. The intervenor-defendant and plaintiff with no objection from the defendant United States have stipulated that the St. Regis Paper Company, since July 2, 1963, manufactured and sold to the United States triple wall corrugated paper board which was flat and adapted for scoring and bending to form shipping containers and which consisted essentially of four paper liners and three corrugated paper

mediums, the mediums being individually interposed between two liners in each instance, and having adhesive applied to the ridges of the corrugations and the liners for intimately and rigidly bonding the mediums and liners together, the corrugations of the mediums being parallel to each other throughout said board and high enough so that the total thickness of said board was at least 3/8", and the total thickness of the liners and mediums was at least approximately .091". The St. Regis Paper Company on September 24, 1964, and on May 6, 1966, used temperatures ranging between 300° and 350° F. as the operating temperature in its double backer for fabricating the triple wall corrugated paper board. The speeds of the double backer corresponding to these temperatures were of the order of 100 to 170 feet per minute with an average speed of 140 to 160 feet per minute. The product manufactured at these temperatures and speeds was a rigid, firm, and well-bonded triple wall corrugated paper board, a flat sheet adapted for scoring. The inner liners of the product produced were 42-pound liners, and the outer liners were 90-pound liners. The mediums were standard mediums.

Conclusion of Law

Upon the foregoing findings of fact which are made a part of the judgment herein, the court concludes as a matter of law that claims 1, 2, and 3 of U.S. Patent No. 3,096,224 are invalid. Judgment is entered to that effect, and plaintiff's petition is dismissed.

Report of the Commissioner to the Court of Claims—
Filed April 15, 1968

In the United States Court of Claims

No. 238-63

(Filed APR 15 1968)

TRI-WALL CONTAINERS, INC. v. THE UNITED STATES AND ST. REGIS PAPER COMPANY, INTERVENOR-DEFENDANT

Report of Commissioner to the Court*

Opinion

Lane, *Commissioner:* This is a patent suit under Title 28 U.S.C. § 1498, in which plaintiff seeks to recover reasonable and entire compensation for the alleged unauthorized use by defendant of a patented invention. Plaintiff alleges infringement of claims 1, 2, and 3 of U.S. Patent No. 3,096,224 entitled "Corrugated Paper Board Product," which issued to plaintiff on July 2, 1963. Plaintiff is the owner of the '224 patent. The parties have agreed to defer accounting issues until the question of liability has been determined. Defendant asserts noninfringement, and intervenor asserts invalidity.

*The opinion, findings of fact, and recommended conclusion of law are submitted under the order of reference and Rule 57(a).

Validity and infringement of the three asserted patent claims are the issues presented to the court for decision.

It is found that claims 1–3 of U.S. Patent No. 3,096,224 are invalid under the provisions of Title 35 U.S.C. § 102.

The invention claimed by the patent in suit relates to triple wall corrugated paper board including three corrugated sheets interposed between four spaced liner sheets. Triple wall corrugated paper board possesses desirable properties for packaging heavy objects and protecting frail objects in transit. It is rigid and strong, comparing favorably with wood as a packaging material for shipping objects too heavy to be shipped in prior corrugated paper board containers. Findings of fact 13–14 which accompany this opinion define the terminology used herein and briefly summarize the history of the corrugated paper board industry.

The three claims of the '224 patent are product-by-process claims. They define a product by use of both structural description and a recitation of the method for making the product. Variations which exist in the language of the three patent claims are not important to the discussion of claim validity which follows: Claim 1, which is representative, is reproduced below with the *method* recitation set out as a separate paragraph:

Patent Claim 1

> Triple wall corrugated paper board which is flat and adapted for scoring and bending to form a shipping container and consisting essentially of four paper liners, three corrugated paper mediums, the mediums being individually interposed between two liners in each instance, and adhesive applied to the ridges of the mediums' corrugations and the liners and intimately and rigidly bonding the mediums and liners together, the corrugations of the mediums being parallel to each other throughout said board and high enough so that the total thickness of said board is at least 3/8", and the total thickness of the liners and mediums being at least approximately .091", this total thickness being distributed between the liners and mediums so that said board is strong and rigid,
>
> said triple wall corrugated paper board having been made by a single pass of all of said sheets prior to setting of said adhesive simultaneously through a corrugated paper board machine having a heating and dry-

ing section operated at a temperature within the range of approximately 300° to approximately 350° F. and at a temperature-speed relationship which is varied with the humidity, the thickness, and porosity of said sheets to provide a residence time in said section sufficient to set said adhesive and make a rigid and strong triple wall corrugated paper board.

Claim 2 of the '224 patent adds to claim 1 that the thickness of the board is at least ½ inch and that the corrugations of at least one of the mediums are at least approximately .181 inch high. Claim 3 adds to claim 2 a recital that at least the liners on the outsides of the board are thicker than the thickest one of the mediums.

The best evidence introduced by the intervenor-defendant to invalidate the patent claims was evidence of a series of sales by plaintiff of a triple wall corrugated paper board produced by a manual process. Section 102(b) of title 35 U.S. Code provides that a person shall be entitled to a patent unless the invention was "in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States."

Sale and public use of triple wall corrugated paper board produced by plaintiff's manual process occurred more than 1 year before October 2, 1953, the priority date for plaintiff's application for a United States patent. Plaintiff does not controvert the evidence showing public use or sale of the manually produced triple wall board but contends that triple wall corrugated paper board as defined by the claims here in suit is patentably distinguishable from triple wall board produced by its manual process.

Plaintiff has attempted to distinguish the patented triple wall corrugated product and the product of its prior art manual procedure by asserting that the machine-made patented product has wood-like characteristics while the manually laminated product has very few desirable qualities for a container. Such assertions are not supported by record evidence in this litigation. The evidence offered by the defendant-intervenor to show substantial identity of the product of the asserted patent claims and the manually produced item sold by plaintiff in 1952 is summarized below.

The product of the asserted patent claims is structurally

indistinguishable from carefully manufactured triple wall board made according to plaintiff's manual method. Any difference in strength which might exist between these two products results from the greater uniformity and efficiency which can be achieved by machine (double backer) manufacture. The actions of the plaintiff's officers and agents during the period 1952–1953 show that the manually produced product was asserted to have the same desirable properties which plaintiff now uses as a basis for arguing patentability of the wall board claim in the '224 patent. It is concluded that the *product* defined in the asserted patent claims is not patentably distinguishable from the *product* of the prior manual process.

It is well established that a product claimed as made by a new process is not patentable unless the product itself is new. *The Wood-Paper Patent*, 90 U.S. (23 Wall.) 566, 596 (1874), *Cochrane* v. *Badische Anilin & Soda Fabrik*, 111 U.S. 293, 311 (1884). In the earlier case the plaintiff sued for infringement of a patent claim for paper pulp described as produced by a new process. The Supreme Court held the patent claim invalid because paper pulp was itself an old product, stating:

> Paper-pulp obtained from various vegetable substances was in common use before the original patent was granted to Watt & Burgess, and whatever may be said of their process for obtaining it, the product was in no sense new. The reissued patent . . . is, therefore, void for want of novelty in the manufacture patented. 90 U.S. (23 Wall.), p. 596.

More recent cases point out that the addition of a method step in a product claim, which product is not patentably distinguishable from the prior art, cannot impart patentability to the old product. *Jungersen* v. *Baden*, 69 F. Supp. 922, 928, 72 USPQ 426, 431 (D.C. S.D. N.Y. 1947), *aff'd*, 166 F. 2d 807 (2d Cir. 1948), *aff'd*, 335 U.S. 560 (1949); *In re Stephens*, 345 F. 2d 1020, 1023, 145 USPQ 656, 658 (CCPA 1965).

The parties have requested findings which bear on the issue of the obviousness of the *method* of manufacturing the product of the asserted patent claims. Because of the legal principles expressed above, obviousness of the *method* is not a question for decision in this litigation. The accompanying

findings of fact, although they may be indirectly relevant to patentability of the method, have been drafted to resolve questions of validity of the asserted *product* claims.

It should be noted that Section 102(b) is literally applicable only if the public use or sale is of the invention on which a patent application is later filed. However, complete identity of (1) a product sold or publicly used and (2) a product as claimed in an application filed more than 1 year after the sale or public use, is not a prerequisite for invalidation of the patent on the basis of the prior sale or use. *Connecticut Valley Enterprises, Inc.* v *United States*, 172 Ct. Cl. 468, 474, 348 F. 2d 949, 953, 146 USPQ 404, 407 (1965); *Dix-Seal Corp.* v. *New Haven Trap Rock Co.*, 236 F. Supp. 914, 917–920, 144 USPQ 57, 61–63 (D.C. Conn. 1964). As the findings of fact show, the prior art product and the claimed product are structurally identical and possess substantially identical physical properties. Section 102(b) is applicable in this case.

In view of the invalidity of all the asserted patent claims, it is not necessary to consider the numerous alternative invalidity defenses raised by the intervenor-defendant, or the issue of infringement. See *Martin-Marietta Corporation* v. *United States*, 179 Ct. Cl. 70, 373 F. 2d 972, 153 USPQ 206 (1967). Plaintiff's petition should be dismissed.

Findings of Fact

1. Plaintiff seeks recovery of reasonable and entire compensation under 28 U.S.C. § 1498 for the unauthorized use and manufacture by or for the United States of a patented invention relating to corrugated paper board products. The claim herein is based upon the alleged infringement of United States Letters Patent No. 3,096,224 granted in the names of Samuel Goldstein and Immanuel Lichtenstein on July 2, 1963, for "Corrugated Paper Board Product." The '224 patent in suit was issued to and is owned by Tri-Wall Containers, Inc., a corporation organized under the laws of the State of New York, as assignee of the inventors.

2. Intervenor-defendant St. Regis Paper Company voluntarily intervened in this case asserting pecuniary interest in that St. Regis had indemnified the defendant United States against certain infringement claims.

3. The parties agreed that the issues of validity and in-

fringement of the '224 patent first be determined upon proofs, arguments, findings of fact, and conclusions of law, and that accounting issues be deferred until after the entry of judgment or liability by the court.

4. No action has been taken on plaintiff's claim by the Congress or any department of the Government in any judicial proceeding including any in the Tax Court.

5. On July 15, 1963, the General Services Administration was notified that its procurement of certain corrugated paper board products was an alleged infringement of United States Letters Patent No. 3,096,224.

6. The petition as originally filed by plaintiff also alleged that procurement by the United States was infringement of two additional patents owned by the plaintiff, namely, United States Patent No. 2,969,170, issued on January 24, 1961, and United States Patent No. 2,985,553, issued on May 23, 1961. Plaintiff, under the provisions of Rule 67(a)(2), dismissed the allegations of patent infringement as to patents 2,969,170 and 2,985,553.

7. The patent in suit, United States Letters Patent No. 3,096,224 dated July 2, 1963, issued upon application Serial Number 150,618, filed November 3, 1961, as a *continuation* of application Serial Number 604,429, filed August 16, 1956, which in turn was a *division* of application Serial Number 383,756, filed October 2, 1953. Application Serial Number 604,429 was not directed solely to subject matter described and claimed in the original application Serial Number 383,756 as filed, and was not exempt from statutory requirements for execution. Application Serial Number 604,429 recites that the application was signed, executed, and sworn to by the joint applicants Goldstein and Lichtenstein before a New York notary public at New York, New York, on August 14, 1956. At the trial, applicant Lichtenstein admitted on cross-examination that he was in Connersville, Indiana, during the entire week from Monday, August 13, until Friday, August 17, 1956; that in fact he did not appear before the notary public in New York and take the oath which the application recites that he took on August 14, 1956; that he does not have a completely clear recollection of the circumstances surrounding the execution of application 604,429; and that he regards

the making of an unsworn statement as being equivalent to taking an oath to the same effect. The conduct of Lichtenstein in signing said application is found to be without fraudulent intent.

8. It is found that the invention claimed in the '224 patent in suit was sufficiently described in applicants' prior abandoned application to comply with Title 35 U.S.C. § 112. One variance exists between abandoned application 604,429 when compared with the fundamentally similar specifications of earlier filed patent 2,759,523. The abandoned application 604,429 refers to a temperature of 330° F. whereas the other specifications recited 350° F. This appears to be the result of a typographical error. The teaching relating to a speed-temperature correlation which is expressed in all three patent specifications is adequate to enable a person skilled in the art to practice the invention.

9. Product claims were not present in original patent application 383,756, filed October 2, 1953. They were first inserted by amendment dated November 4, 1954. After a restriction requirement made by the Patent Office, the product claims were withdrawn from the original application. The second patent application 604,429, filed on August 16, 1956 (the abandoned application), and the third application 150,618, filed on November 3, 1961 (the application which matured into the '224 patent in suit), both contained only product claims. During the prosecution of product claims in the three applications, the claim recitals were varied. The product claims of all three patent applications recited the same basic structure of three corrugated sheets interposed between four liner sheets. The '224 patent in suit is entitled to a priority date for this litigation as of October 2, 1953, the filing date of the original application 383,756.

10. The '224 patent in suit discloses a corrugated paper board product which is rigid and strong, which compares favorably with wood as a packaging medium, and which has a cushioning effect on products contained therein which is not exhibited by packages or crates constructed of wood. The patented paper board includes three corrugated sheets interposed and sandwiched between four spaced liner sheets, formed by simultaneously setting the adhesive during a single pass of

all of said sheets through a heating and drying section of a machine. While prior triple ply corrugated paper board in which three corrugated sheets had been interposed between four spaced liner sheets had been produced, such a product had not been produced by a machine in the manner recited in the '224 patent claims.

11. The product claimed in the '224 patent may be described by the manner in which it is produced. Three sheets of paper are corrugated and the ridges of the corrugations are adhesively secured to liner sheets forming three composite sheets of single face corrugated paper board. The three sheets of single face corrugated board are brought into juxtaposition at one end of a corrugated paper board machine and passed over hot preheater drums. An outer liner or fourth liner is also run over a hot preheater drum at approximately the same time. The three sheets of single face corrugated paper board and the liner sheet are all preheated, and the single face sheets are then run over gluing rolls where glue is applied to the ridges of the corrugations which extend transversely to the direction of travel of the paper webs, and the four juxtaposed paper webs are brought into a machine known as a double backer in order to set the glue just applied. At the time that the juxtaposed paper webs go into the double backer the sheets are relatively heavily laden with moisture. Enough heat is applied in the double backer not only to set the glue but also to dry the paper to at least some extent. The inventors found that the optimum conditions for accomplishing the proper setting of the glue, and therefore bonding of the four juxtapositioned paper webs is to run the webs through the double backer at between 135 and 150 feet per minute with the temperature of the hot plates of the double backer maintained between 325° and 330° F. An exact speed-temperature relationship cannot be set forth due to variables encountered such as humidity, thickness of paper, porosity, and other factors. The '224 patent specification discloses speed and temperature ranges which encompass 100 to 175 feet per minute and 300° to 350° F.

12. The three claims of the '224 patent are product claims. They recite structural limitations and also recite the method for making the product. Claim 1, reproduced in the body of

the opinion, is representative of all three claims in issue which differ only in reciting different dimensions for corrugated and liner sheets, as noted in the opinion.

13. The history of the corrugated paper board industry involves numerous product improvements. Unlined corrugated material was known as early as 1870. Corrugated sheets have been used as cushioning but since they had no structural strength they could not be used as a carton. Increased strength has been a goal of the industry in its attempts to supplant wood as a material for the construction for shipping containers. The strength of corrugated paper products was at an early date slightly improved by gluing a liner, a flat sheet of paper, to a corrugated medium to produce a single face corrugated sheet. Single wall board, sometimes referred to as double face, followed. Single wall board includes a corrugated medium placed between two liner sheets. Single wall resulted in a paper board with enough structural strength to be used in the manufacture of cartons. In approximately 1920 the corrugated paper board container industry began to make a board which was designated as double wall board. Double-wall board consists of two corrugated mediums interposed between three liner sheets. The advantages of double wall board over single wall (double face) board were that double wall board enabled a shipper to increase the weight of the contents in a shipment and that it provided a material with a greater cushioning effect. In the early 1950's plaintiff's predecessor developed and introduced triple wall corrugated paper board. This product was a corrugated paper board which embodied three corrugated mediums interposed between four spaced liner sheets.

14. The history of development work on triple wall board by plaintiff is important in relation to validity of the patent in suit. In 1947 plaintiff became an exclusive licensee for the United States east of the Mississippi under patents involving a product known as *Laminite*. *Laminite* was a channel-shaped, triple wall, corrugated paper product impregnated with sulfur to increase the strength of the product. This product was originally made by gluing together three sheets of previously formed single face board and one liner sheet on a machine and then immersing the product in molten sulfur. Difficulties were encountered with the initial channel-

forming machine for making *Laminite*. Plaintiff consulted numerous experts to determine the best method of overcoming the forming machine difficulties. At the time that the experts were considering possible solutions to the machine problems, there was also running at the plant a corrugating machine consisting of two single facers and a double backer. The channel-forming machine and the corrugating machine were parallel to each other, separated by a distance of a few feet. The channel-forming machine which made *Laminite* did not obtain proper adhesion or lamination between the various components of the triple ply product. When the mandrels of the *Laminite* machine were not exactly aligned, the resulting product had kinks caused by slippage of the various plies of the triple ply product. A new machine was built to produce the triple ply product which was to be impregnated with sulfur. The new machine did not perform in the manner expected and produced only waste. Plaintiff was in the position where it could not fill the orders of its customers for *Laminite*.

15. A manual method for the manufacture of *Laminite* was developed. The method consisted of making a double wall sheet of corrugated paper board upon machinery, i.e., with two single facers and a double backer. The double wall board was then cut to suitable lengths and placed on a table where a cut length of single face was passed over a suitable adhesive roll by several operators who manually placed the single face over the double wall board in order to adhere the single face to the double wall. The manufacture of triple wall by this manual method is shown in intervenor-defendant's exhibit 8. The double wall board had previously been appropriately scored so that after the single wall had been set in place the triple ply board could be placed upon a suitable jig and folded into a channel shape. The channel shape was then dipped into a molten sulfur bath. Triple wall corrugated board produced by plaintiff's above-described method was also sold in the plain, unimpregnated state, shipped in the form of flat, scored, and slotted sheets for making shipping containers such as fivefold cartons and regular slotted cartons and covers for *Laminite* channels. Starting at least as early as May 16, 1952, plaintiff sold its

unimpregnated triple wall corrugated paper board products under the trademark "Tri-Wall Pak."

16. Contemporaneous sales correspondence and documents produced by plaintiff from its files and in evidence in intervenor-defendant's exhibit 9A in this case reflect the following sales of unimpregnated triple wall corrugated paper board products produced by plaintiff's manual method more than 1 year prior to October 2, 1953, the priority date of the '224 patent claims.

Product	Customer	Date	IDX-9A
Scored covers	Kaiser Al. & Chem. Corp.	7/18/51	L-10
Containers	Bigelow-Sanford Carpet Co.	3/18/52	L-40
Containers	Magee Carpet Co.	7/24/52	L-62
Containers	Metal Trims Inc.	9/ 8/52	L-73
Containers	U.S. Rubber Co.	9/25/52	L-84
Containers	Columbia Steel & Shafting Co.	9/29/52	L-85

17. With respect to the quality and attributes of the unimpregnated triple wall corrugated paper board made by its prior manual method, plaintiff made the following contemporaneous claims and representations to its customers and potential customers:

(a) To Aluminum Company of America, on September 11, 1951: A possible substitute "for your present 3/8" lumber containers."

(b) To Kirsch Company, on January 3, 1952: This "container is decidedly competitive with the wood box, both performancewise and costwise. In fact, we are now supplying Lorentzen Hardware with this type box for their export shipments."

(c) To Kaiser Aluminum & Chemical Corp., on February 28, 1952: "[W]e understand that you are contemplating continuing the use of Lamnite for certain sizes, and possibly substituting the five fold container for your present wood boxes. With this in mind, we would like to ship you a representative quantity of the five fold sheets in a size that would be best adapted for your test shipments. * * * Incidentally, the puncture test on our triple wall sheet is over 20% better than that for Alcoa's sheet."

(d) To Engineer Research & Development Labs, on April 21, 1952: "We shipped the ten pieces of triple wall on April 17th, * * *. Walter Armstrong,

while at Atlantic City, thought there might be a use for our triple wall sheets as a subsfitute for plywood in the packing of army maps. We hope so!"

(e) To Quartermaster Food & Container Institute, on July 8, 1952: "Triple wall may be obtained in plain sheet form or in special design, slotted and scored sheet which forms a container up to twenty-four inches in cross section and in lengths up to twenty feet."

(f) To Columbia Steel & Shafting Co., on September 3, 1952: "Our Tri-Wall Pak tests approximately 800#."

(g) To Reynolds Metals Company, on September 19, 1952: "At present this particular type of container [Tri-Wall] is being used not only where a great deal of cushioning is required but also as a substitute for wood boxes in export as well as domestic shipments. Our puncture test of 'Tri-Wall Pack' is in the neighborhood of 800 lbs."

18. Other documents from plaintiff's files and in evidence, in addition to those identified above, establish the commercial use of unimpregnated triple wall corrugated board containers produced by plaintiff's manual method more than a year prior to October 2, 1953.

(a) In November 1951, in connection with a price quote on unimpregnated fivefold triple wall boxes submitted to Pittsburgh Plate Glass Co., plaintiff wrote:

> We are enclosing several pictures taken at Michigan Seamless Tubing plant showing our Triple Wall boxes in use. These particular boxes are 6″×8″—24′4″ and, as you see, they are taking a considerable amount of abuse.

(b) In January 1952, plaintiff wrote to Appleton Wire Works, Inc.:

> In addition to our Laminite line, we have developed something that no other corrugated manufacturer has attempted, namely, a Triple Wall, Five Fold, Scored Corrugated Sheet, which may be made up into containers measuring up to 14″ and in length up to and including 25′. This product has been very popular as a substitute for the wooden box where the item is not too flexible, particularly in the long lengths.

(c) In January 1952, plaintiff also wrote to The Norton Company:

> [W]e are manufacturing a Triple Wall, Five Fold, Scored Corrugated Sheet in sizes to make up containers measuring 14" and up to 25' in length. This triple wall flat sheet is considerably stronger than the present double wall sheet now used in industry, and compares favorably in end use with a wood box, particularly in the shorter lengths. Naturally, the cost is considerably less than wood.

(d) In March 1952, in an interoffice memo, plaintiff's sales manager wrote:

> Kindly ship to me at once * * * triple wall five fold sheet. * * * [C]ustomer (Michigan Seamless Tube Co.) is ready to reorder C.L. and wants to decide whether or not to have slotted ends. ["C.L." in this memo means freight car load.]

(e) In September 1952, plaintiff wrote to Columbia Steel & Shafting Co.:

> Tri-Wall Pak is now being supplied to Michigan Seamless Tube Co., * * *; Van Huffel Tube Co., * * *; Trent Tube Co., * * *; and to many manufacturers of metal extrusions.

19. The commercial success and sales of plaintiff's triple wall corrugated board products produced by the manual method, coupled with a desire to reduce production costs and increase production rates, prompted the patentees to develop a machine method of making the triple wall board product. The all-machine laminated triple wall board was marketed for the first time in 1953. For a short time thereafter plaintiff sold both machine-made and manually produced triple wall board under the same trademark, "Tri-Wall Pak."

20. Any degree of difference in quality between the triple wall corrugated board in which all three single face components and the bottom liner are machine-laminated by means of a conventional double backer and the triple wall board of the same constituents in which only two of the three single face components and the bottom liner are machine-laminated by means of a conventional double backer, and the third single face component is then hand-laminated to the resulting composite structure, results from a greater degree of uniformity of bonding of the third single face component to the remaining structure which can be achieved by the double

backer. It is possible to achieve good bonding by either method.

21. As between two specimens of triple wall board made of the same components, one made by the manual method, and the other made by the all-machine method, the glue bonds in each specimen being well made in accordance with their respective manufacturing methods, there is no significant difference in the quality of the boards or in their suitability for use in shipping containers. The test results of record in this case show a substantial identity of physical properties.

22. The product defined in the '224 patent claims is found to be anticipated by the product produced by plaintiff under its prior manual method. The patented product is found to possess the identical structure and indistinguishable physical properties when compared to the prior art product of plaintiff.

23. The patent application files of the three relevant applications show that the Patent Office was not apprised of the extent or timing of the public sales of triple wall corrugated board made by plaintiff's prior manual method. There is no indication that the Patent Office was aware of the complete facts regarding such prior use and sale when it allowed and issued the claims of the '224 patent.

24. Intervenor-defendant has asserted that the '224 patent is invalid for the reason that there had been produced by Syracuse Containers, a division of Robert Gair Company, Inc., a product which was substantially identical to the product disclosed and claimed. During the period 1935–1940, the Syracuse Containers plant produced and sold a specialized item in the form of an insulating board, for certain items such as ice cream containers, composed of three liners and three corrugated mediums. The insulating board made at Syracuse Containers including only three liners is structurally distinguishable from the plaintiff's claimed product. There has been no showing that the Syracuse board possesses strength comparable to plaintiff's claimed triple wall board. The product made at Syracuse does not anticipate the '224 patent claims.

25. The invention claimed is set forth in the three product-by-process claims which vary only in calling for different

thicknesses of paper board and height of the fluted components. All three patent claims recite a triple wall corrugated paper board product made by a method defined as follows:

> * * * said triple wall corrugated paper board having been made by a single pass of all of said sheets prior to setting of said adhesive simultaneously through a corrugated paper board machine having a heating and drying section operated at a temperature within the range of approximately 300° to approximately 350° F. and at a temperature-speed relationship which is varied with the humidity, the thickness, and porosity of said sheets to provide a residence time in said section sufficient to set said adhesive and make a rigid and strong triple wall corrugated paper board.

26. The intervenor-defendant and plaintiff with no objection from the defendant United States have stipulated that the St. Regis Paper Company, since July 2, 1963, manufactured and sold to the United States triple wall corrugated paper board which was flat and adapted for scoring and bending to form shipping containers and which consisted essentially of four paper liners and three corrugated paper mediums, the mediums being individually interposed between two liners in each instance, and having adhesive applied to the ridges of the corrugations and the liners for intimately and rigidly bonding the mediums and liners together, the corrugations of the mediums being parallel to each other throughout said board and high enough so that the total thickness of said board was at least 3/8", and the total thickness of the liners and mediums was at least approximately .091". The St. Regis Paper Company on September 24, 1964, and on May 6, 1966, used temperatures ranging between 300° and 350° F. as the operating temperature in its double backer for fabricating the triple wall corrugated paper board. The speeds of the double backer corresponding to these temperatures were of the order of 100 to 170 feet per minute with an average speed of 140 to 160 feet per minute. The product manufactured at these temperatures and speeds was a rigid, firm, and well-bonded triple wall corrugated paper board, a flat sheet adapted for scoring. The inner liners of the product produced were 42-pound liners, and the outer liners were 90-pound liners. The mediums were standard mediums.

Recommended Conclusion of Law

Upon the foregoing findings of fact which are made a part of the judgment herein, the court concludes as a matter of law that claims 1, 2, and 3 of U.S. Patent No. 3,096,224 are invalid. Judgment is entered to that effect, and plaintiff's petition is dismissed.